

519,025

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



Rec'd PCT/PTO 22 DEC 2004



(43) International Publication Date
8 January 2004 (08.01.2004)

PCT

(10) International Publication Number
WO 2004/002605 A1

(51) International Patent Classification⁷: B01D 37/00,
39/00

RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

(21) International Application Number:
PCT/DK2003/000443

(22) International Filing Date: 26 June 2003 (26.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA 2002 00986 26 June 2002 (26.06.2002) DK

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(81) Designated States (national): AE, AG, AL, AM, AT (util-
ity model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (util-
ity model), DE, DK (utility model), DK, DM, DZ, EC, EE
(utility model), EE, ES, FI (utility model), FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO,

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO
patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG,
ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU,
TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE,
DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT,
RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: DUAL POROSITY FILTER

(57) **Abstract:** Disclosed is a method and a filter unit for depleting or enriching a liquid or gas with substances(s) comprising i) providing a filter unit comprising at least one convective layer and at least one receiving layer adjacent one another, ii) passing the liquid or gas through the filter so that the main direction of flow is along the layers and the main flow of liquid gas is in the convective layer, allowing the substance(s) to: a) be transferred from a convective layer to a receiving layer, and b) be retained or otherwise modified or transferred within a receiving layer, or c) be provided by the receiving layer, and d) be transferred from the receiving layer to the fluid in the convective layer. The filter unit according to the present invention work by diffusion, sedimentation, and mixing-zone mass flow in combination with sorption or any other retention or depletion mechanism e.g. adsorption, absorption, precipitation, straining, sedimentation, degradation, chemical modification, and enriching or other feeding mechanisms, e.g. dissolution, biological productions, chemical reaction productions. It is one object of the invention to provide a filter unit having a high and from the filtering material independently determined hydraulic capacity during the whole lifetime of the filter and yet providing good and flexible conditions for exchange of substance(s), e.g. combating pollutants in wastewater. The filter unit can be used for treatment of any fluid, preferred is where huge amounts of fluid have to be filtered per time unit, and/or where the fluid contains alternating concentrations of substances to be depleted, such as storm water runoff (urban, highway and other road runoff), combined sewer overflow, effluent from wastewater treatment plants, groundwater, surface water (lake, rivers, stream), industrial wastewater, but the filter unit can also be used for enriching fluids with substances, preferred is where huge amounts of fluid have to be enriched per unit time, or where the enrichment has to be combined with a depletion, such as removal of a suspended solid, and addition of a micro-organism.



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